IN THE CLAIMS

1. (original) A method of forming a magnetic tunnel junction device, comprising:

forming a first magnetic layer and a second magnetic layer, at least one of the first and the second magnetic layers including diffusion components selected to adjust one or more properties of the magnetic tunnel junction device; and

forming a barrier layer between the first and the second magnetic layers, the barrier layer comprising migrated diffusion components from the at least one magnetic layer, wherein the diffusion components adjust the one or more properties.

2. (original) The method of claim 1, wherein the diffusion components are selected to adjust a series resistance of the magnetic tunnel junction device.

3. (original) The method of claim 1, wherein the diffusion components are selected to decrease a bandgap of the barrier layer.

4. (original) The method of claim 1, wherein:

forming the first magnetic layer comprises forming a pinned magnetic layer; and

forming the second magnetic layer comprises forming a free magnetic layer.

5. (original) The method of claim 1, wherein one or more of the first and the second magnetic layers comprises a multi-layer structure.

6. (original) The method of claim 1, wherein one or more of the first and the second magnetic layers comprises an alloy of CoFe.

7. (original) The method of claim 6, wherein the alloy of CoFe comprises CoFeHf.

8. (original) The method of claim 7, wherein the CoFeHf comprises about 5 to about 10 atomic percent Hf.

9. (currently amended) The method of claim 6, wherein the [[allow]] alloy of CoFe comprises CoFeZr.

10. (original) The method of claim 9, wherein the CoFeZr comprises about 5 to about 10 atomic percent Zr.

11. (original) The method of claim 1, wherein the diffusion components comprises Hf.

12. (original) The method of claim 1, wherein the diffusion components comprises Zr.

13. (original) The method of claim 1, wherein forming the first and the second magnetic layers comprises forming at least one amorphous layer.

14. (original) The method of claim 1, wherein forming the barrier layer comprises forming a layer comprising a compound of AlOx having a thickness of about 3 Δ to about 6 Δ.

15. (original) The method of claim 1, wherein the forming the barrier layer comprises forming a barrier layer comprising AlHfOx.

16. (original) The method of claim 1, wherein forming the barrier layer comprises forming a barrier layer comprising AlZrOx.

17. (currently amended) A method of forming a magnetic tunnel junction device, comprising:

forming ~~an magnetic~~ a magnetic tunnel junction active region, comprising: a first magnetic layer and a second magnetic layer, at least one of the first and the second magnetic layers including diffusion components selected to adjust one or more properties of the magnetic tunnel junction device; and

a barrier layer between the first and the second magnetic layers; and

annealing the active region to enhance migration of the diffusion components from the first magnetic layer to the barrier layer, wherein the migrated diffusion components adjust the one or more properties.

18. (original) The method of claim 17, wherein the at least one layer comprises an alloy of CoFe.

19. (original) The method of claim 17, wherein the at least one layer comprises CoFeHf.

20. (original) The method of claim 19, wherein the CoFeHf comprises about 5 to about 10 atomic percent Hf.

21. (original) The method of claim 17, wherein the at least one layer comprises CoFeZr.

22. (original) The method of claim 21, wherein the CoFeZr comprises about 5 to about 10 atomic percent Zr.

23. (original) The method of claim 17, wherein the diffusion components comprise Hf.

24. (original) The method of claim 17, wherein the diffusion components comprise Zr.

25. (original) The method of claim 17, wherein the barrier layer has a thickness of about 3 Δ to about 6 Δ.

26. (original) The method of claim 17, wherein annealing the active region comprises annealing the active region at a temperature of less than about 300 C.

27. (original) The method of claim 17, wherein the diffusion components are selected to decrease a series resistance of the active region.

28. (original) The method of claim 17, wherein annealing the diffusion components are selected to decrease a band gap of the barrier layer.

29. (original) The method of claim 17, wherein annealing the active region to enhance migration of the diffusion components from the first magnetic layer to the barrier layer comprises forming AlHfOx in the barrier layer.

30. (original) The method of claim 17, wherein annealing the active region to enhance migration of the diffusion components from the first magnetic layer to the barrier layer comprises forming AlZrOx in the barrier layer.

31. (original) A method for sensing a magnetic field, comprising:

forming a magnetic tunnel junction device having an active region, comprising: a first magnetic layer and a second magnetic layer, at least one of the first and the second magnetic layers including diffusion components selected to adjust one or more properties of the magnetic tunnel junction device; and

a barrier layer between the first and the second magnetic layers; and

annealing the active region to enhance migration of the diffusion components from the first magnetic layer to the barrier layer, the migrated diffusion components adjusting the one or more properties;

driving the magnetic tunnel junction device using an electrical signal; and

detecting an electrical resistance based on magnetic orientations of the first and the second magnetic layers.

32. (original) The method of claim 31, wherein the at least one layer comprises CoFeHf.

33. (original) The method of claim 31, wherein the at least one layer comprises CoFeZr.

34. (original) The method of claim 31, wherein the diffusion components comprise Hf.

35. (original) The method of claim 31, wherein the diffusion components comprise Zr.

36. (original) The method of claim 31, wherein annealing the active region comprises annealing the active region at a temperature of about 300 C.

37. (original) The method of claim 31, wherein the diffusion components are selected to reduce a series resistance of the active region.

38. (original) The method of claim 31, wherein the diffusion components are selected to decrease a bandgap of the barrier layer.

39. (original) The method of claim 31, wherein annealing the active region to enhance migration of the diffusion components from the first magnetic layer to the barrier layer comprises forming AlHfOx in the barrier layer.

40. (original) The method of claim 31, wherein annealing the active region to enhance migration of the diffusion components from the first magnetic layer to the barrier layer comprises forming AlZrOx in the barrier layer